

CLAIMS

The invention claimed is:

5

1. A device comprising:

a network interface for coupling to a network; and

a processor coupled with the network interface, in which the processor is adapted to

10 establish a VoIP connection;

place the VoIP connection on hold;

determine whether there is return speech from the VoIP connection that has been placed on hold; and

if so, withhold transmitting on-hold music/sound through the VoIP

15 connection.

2. The device of claim 1, in which

determining is performed by interpreting a VAD ON/OFF event.

20 3. The device of claim 1, in which

the VoIP connection is over a network voice path, and

determining is performed by:

monitoring the voice path for return packets; and

analyzing to determine whether the return packets encode speech.

25

4. The device of claim 3, in which

analyzing is for speech energy that corresponds to speech sustained for a predetermined time minimum.

30 5. The device of claim 1, in which the processor is further adapted to:

silence-monitor to determine whether prior return speech has discontinued; and

if so, transmit on-hold music/sound through the VoIP connection.

1003844-D10302

6. The device of claim 5, in which silence-monitoring is performed by interpreting a VAD ON/OFF event.
7. The device of claim 5, in which silence-monitoring is performed by interpreting a received SID packet.
- 5 8. The device of claim 5, in which the VoIP connection is over a network voice path, and silence-monitoring is performed by:
 - 10 monitoring the voice path for return packets; and analyzing to determine whether the return packets encode silence.
9. The device of claim 8, in which analyzing is for speech energy that corresponds to silence sustained for a 15 predetermined time minimum.
10. A device comprising:
 - means for establishing a VoIP connection;
 - means for placing the VoIP connection on hold;
 - 20 means for determining whether there is return speech from the VoIP connection that has been placed on hold; and if so, means for withholding transmitting on-hold music/sound through the VoIP connection.
- 25 11. The device of claim 10, in which the means for determining includes means for interpreting a VAD ON/OFF event.
12. The device of claim 10, in which 30 the VoIP connection is over a network voice path, and the means for determining includes:
 - means for monitoring the voice path for return packets; and
 - means for analyzing to determine whether the return packets encode speech.

13. The device of claim 12, in which
the means for analyzing is for speech energy analyzes for speech sustained for
a predetermined time minimum.
- 5 14. The device of claim 10, further comprising:
means for silence-monitoring to determine whether prior return speech has
discontinued; and
if so, means for transmitting on-hold music/sound through the VoIP
connection.
- 10 15. The device of claim 14, in which
the means for silence-monitoring includes means for interpreting a VAD
ON/OFF event.
- 15 16. The device of claim 14, in which
the means for silence-monitoring includes means for interpreting a received
SID packet.
- 20 17. The device of claim 14, in which
the VoIP connection is over a network voice path, and
the means for silence-monitoring includes:
means for monitoring the voice path for return packets; and
means for analyzing to determine whether the return packets encode silence.
- 25 18. The device of claim 17, in which
the means for analyzing is for speech energy analyzes for speech sustained for
a predetermined time minimum.
- 30 19. An article comprising: a storage medium, the storage medium having
instructions stored thereon, in which when the instructions are executed by at least
one device, they result in:
establishing a VoIP connection;
placing the VoIP connection on hold;

determining whether there is return speech from the VoIP connection that has been placed on hold; and

if so, withholding transmitting on-hold music/sound through the VoIP connection.

5

20. The article of claim 19, in which determining is performed by interpreting a VAD ON/OFF event.

21. The article of claim 19, in which

10 the VoIP connection is over a network voice path, and determining is performed by:

monitoring the voice path for return packets; and

analyzing to determine whether the return packets encode speech.

15 22. The article of claim 21, in which

analyzing is for speech energy that corresponds to speech sustained for a predetermined time minimum.

23. The article of claim 19, in which the instructions further result in:

20 silence-monitoring to determine whether prior return speech has discontinued; and

if so, transmitting on-hold music/sound through the VoIP connection.

24. The article of claim 23, in which

silence-monitoring is performed by interpreting a VAD ON/OFF event.

25. The article of claim 23, in which

silence-monitoring is performed by interpreting a received SID packet.

30 26. The article of claim 23, in which

the VoIP connection is over a network voice path, and silence-monitoring is performed by:

monitoring the voice path for return packets; and

analyzing to determine whether the return packets encode silence.

27. The article of claim 26, in which
analyzing is for speech energy that corresponds to silence sustained for a
predetermined time minimum.

5

28. A method comprising:
establishing a VoIP connection;
placing the VoIP connection on hold;
determining whether there is return speech from the VoIP connection that has
10 been placed on hold; and
if so, withholding transmitting on-hold music/sound through the VoIP
connection.

15 29. The method of claim 28, in which
determining is performed by interpreting a VAD ON/OFF event.

30. The method of claim 28, in which
the VoIP connection is over a network voice path, and
determining is performed by:
20 monitoring the voice path for return packets; and
analyzing to determine whether the return packets encode speech.

31. The method of claim 30, in which
analyzing is for speech energy that corresponds to speech sustained for a
25 predetermined time minimum.

32. The method of claim 28, further comprising:
silence-monitoring to determine whether prior return speech has discontinued;
and
30 if so, transmitting on-hold music/sound through the VoIP connection.

33. The method of claim 32, in which
silence-monitoring is performed by interpreting a VAD ON/OFF event.

34. The method of claim 32, in which
silence-monitoring is performed by interpreting a received SID packet.

5 35. The method of claim 32, in which
the VoIP connection is over a network voice path, and
silence-monitoring is performed by:
monitoring the voice path for return packets; and
analyzing to determine whether the return packets encode silence.

10 36. The method of claim 35, in which
analyzing is for speech energy that corresponds to silence sustained for a
predetermined time minimum.

20200104-DOCKET